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August 23 By Garret Ellison

ROCKFORD, MI -- Industrial chemicals once used to manufacture the iconic Hush Puppies shoe brand may be contaminating the Rogue River in an area where leftover leather from a demolished tannery litters the riverbank above the Rockford dam.

Starting this month, Wolverine World Wide will begin testing the river and its former tannery grounds in Rockford for chemicals used to waterproof pigskin, the remnants of which some citizens worry may be endangering fish and public health.

According to a work plan and other documents obtained by MLive through the Freedom of Information Act, the shoe company is looking for, among other contaminants, a fluorinated chemical that was formerly the key ingredient in the fabric protector Scotchgard.

That chemical, perfluoroctanesulfonic acid, or PFOS, is no longer manufactured in the United States because of its public health risk. Through studies, exposure has been tied to liver disease, thyroid malfunction and developmental problems in children.

The chemical's presence in Rogue River fish has been known to state health officials for several years, but local site managers at the Michigan Department of Environmental Quality say they only learned that PFOS was used at the tannery this year.

In 2013, statewide testing found elevated levels of PFOS in fish above the Rockford dam, prompting a consumption advisory from the Michigan Department of Health and Human Services that was first printed in the state's Eat Safe Fish Guide in 2015.

Wolverine's PFOS testing is scheduled to begin Aug. 28. The work will analyze the property for more than a dozen different fluorinated compounds in the same family as PFOS, including perfluoroctanoic acid, or PFOA, a sister chemical.

"The idea that those compounds were associated with the tannery is still relatively new to us," said David O'Donnell, Grand Rapids DEQ district remediation supervisor. "I'm glad they have agreed to do the sampling and look forward to getting the results back."

The work was added this year to a slate of contaminant sampling and planned remediation around the former tannery footprint -- 15 acres of prime, empty real estate next to a bustling small town business district anchored by the picturesque dam.

From 1908 to 2010, a tannery, power plant, offices, warehouse, hide storage area and wastewater treatment plant occupied a Wolverine headquarters complex for the publicly-traded shoe company, which owns popular brands like Merrell and Hush Puppies.

Hush Puppies, a casual brushed-suede shoe with rubber soles, launched in 1958 and achieved international success, helping the local Wolverine Shoe & Tanning Co. become Wolverine World Wide, which recorded $2.4 billion in revenue last year.

Although Wolverine no longer makes Hush Puppies in Rockford, remnants of the halcyon days of manufacturing remain -- and they may be causing problems.

Wolverine plans to measure ammonia levels in the Rogue River and Rum Creek, a tributary that runs through the former tannery grounds. High ammonia levels have been known to kill fish in the wild, and the DEQ says there are questions about whether decomposing leather hides and scraps are raising ammonia levels in the groundwater.

According to a March 20, 2014 report to the DEQ from consultant Rose & Westra, leftover leather is known to be on Wolverine's property north of Rum Creek and under the adjacent White Pine Trail. According to local folkore, the debris also underlies low, cattail-covered mudflats in the Rogue known as the "Island of Lost Soles."

The leather debris is also plainly visible along the riverbank. Near the Wolverine retail store, weathered leather scraps appear to crawl toward the river from the underbrush. Enmeshed within the litter are rubber trimmings and entire shoe soles bearing the Hush Puppies brand name. To find the debris, one need only push aside the riverbank vegetation next to the trail and look down.

The leather litter has sat there for years, frustrating the Concerned Citizens for Responsible Redevelopment group, which has been critical of Wolverine's handling of environmental contamination on the tannery grounds. The group says the DEQ, which oversees the property under an agreement with the U.S. Environmental Protection Agency, has not adequately scrutinized the site or taken the leather debris seriously enough.

The debris may not just be unsightly. An environmental scientist at Grand Valley State University says that if the scraps along the river and the buried leather on site were treated with Scotchgard, their presence may be helping spread PFOS.

"If the leather scraps are from making shoes, they have probably been Scotchgarded," said Richard Rediske, an environmental chemist at Grand Valley State University's Annis Water Resources Institute who helps advise the citizens group.

"Scotchgard sticks to organic material," Rediske said. "It would be in the solid material that's left on site -- the leather that's left on site. There's a lot of it."

John Pawloski, site manager with the Grand Rapids DEQ office, admitted the leather is "something we're going to have to look into."

"We have no idea when those leather scraps were buried there," said Pawloski. "That tannery was in operation for about 100 years. Based on the info we have, it's possible that leather was put there before PFOS came into existence" around 1950.

The DEQ has overseen the Rockford tannery site since 2012, when the EPA decided not to designate the property as a Superfund site partly at the urging of Rockford city officials, who wanted to expand the downtown commercial district onto the property.

In 2011, Wolverine squashed plans for a 10,000 square-foot retail store on the property, although CEO Blake Krueger floated the possibility of a boutique hotel, restaurants and said at the time redevelopment was only "delayed" by market forces. However, no serious plans to build on the property have materialized in the near decade since Wolverine laid off tannery workers and razed the facility.

According to documents obtained by FOIA, the DEQ notified Wolverine on Nov. 17, 2016 that groundwater testing indicated contamination may be leaving the property and entering the Rogue River, although more data was needed to be sure. In 93 of 100 samples collected between 2014 and 2016, "at least one or more contaminant exceeds generic cleanup criteria," the notification stated.

However, the notification made no mention of PFOS or Scotchgard, which wasn't on the district DEQ radar until January. It also said nothing of more investigation into buried leather or riverbank scraps, which Pawloski acknowledged only took on added significance beyond concerns about ammonia when Wolverine's use of Scotchgard for decades at the tannery was brought to his attention.

Pawloski said the DEQ has not formally asked Wolverine to sample leather scraps along the river for PFOS, but said officials have "talked" about the litter with the company.

Starting Aug. 28, Wolverine plans to install new monitoring wells, measure ammonia concentrations in the river and Rum Creek, which the tannery was one built atop, and test the river and water trapped in sediment pores for PFOS and similar compounds. The company also plans to bore more holes on the property to look for leather.

In a statement to MLive, Wolverine said the leather scraps along the riverbank are "scheduled to be removed" when the "surrounding vegetation has receded" this fall.

Despite numerous calls and emails to company communication staff, outside attorneys and consultants, Wolverine would not make anyone available to interview. In response to questions through attorney John Byl, Wolverine acknowledged Scotchgard was first used at the tannery in 1958 -- the year the Hush Puppies brand was born.

However, Wolverine says it didn't know PFOS was used in Scotchgard at the tannery until last year.

"In fall 2016, Wolverine first learned that PFOS may have been present in compounds used at its former tannery in Rockford," the company said in an emailed statement, explaining that it subsequently agreed to voluntarily sample for the compound starting in late August due to "water table levels and other geologic factors."

As for when the company stopped using the chemical, Wolverine said that it "does not have records indicating when 3M's Scotchgard treatment was last used in connection with the leathermaking process at its former tannery site."

Scotchgard was first sold by multinational conglomerate 3M in 1956 and helped protect fabric, furniture and carpets from water and stains for decades. It was reformulated in the early 2000s after the Environmental Protection Agency determined the key chemical ingredient, PFOS, was toxic to humans, magnifies up the food chain and persists in the environment.

PFOS is one of numerous such per- and polyfluoroalkyl substances called PFAS, (also called perfluorinated chemicals, or PFCs), used for years in fabrics, fire-fighting foams, food packaging, cleaning products and pesticides. Versions like PFOS were phased-out of manufacture more than 15 years ago, but the compounds are nonetheless considered "emerging contaminants" that are only now generating widespread public health concern.

Although PFOS is no longer made in the U.S. and its domestic usage is tightly controlled, it is still produced overseas and enters the country via some imports. There is high industrial demand for the chemistry and manufacturers have developed what they call safer versions. 3M developed a new version of Scotchgard that relies on perfluorobutane sulfonate, or PFBS, as its key ingredient.

In Rockford, the presence of PFOS flew under the DEQ district radar despite publicly available sources and DEQ documents that establish Wolverine's past usage. Pawloski acknowledged it took a Jan. 24 memo from Rediske to connect the dots for the DEQ that Wolverine used Scotchgard on Hush Puppies.

In the memo, Rediske pointed out that process patents on file with the federal government, old trade publications found via Google and even Grand Rapids Press stories online establish the chemical's presence in Rockford between 1958 and 2002.

Scrap leather, waste buried on site and tannery wastewater may have contained PFOS for at least 44 years, Rediske wrote, necessitating not just a new site inspection but scrutiny of old local disposal sites that might have taken-in tannery waste.

"Based on the presence of elevated levels of PFOS in area fish and the overwhelming likelihood of significant PFOS usage at the site, it is imperative that soils, groundwater and scrap leather deposits be analyzed for this chemical before closure plans move forward," he wrote.

Rediske became aware of PFOS in Rockford through survey work conducted by the DEQ several years ago using a federal Great Lakes Restoration Initiative grant. Largemouth bass sampled as high as 95 parts-per-billion (ppb), and white suckers as high as 33-ppb for PFOS in 2013, according to the state data.

Unlike common Michigan contaminants such as PCBs and dioxins, PFOS can't be reduced in fish meals by trimming and cooking fish filets because the compound binds to proteins in the

liver and blood rather than accumulating in fat cells.

Scientists who study compounds like PFOS consider the public health threat they pose to be significant because they are toxic, water soluble, bio-accumulative and persist in the environment due to the strength of the fluorine-bonded, long-chain chemistry, which does not naturally degrade.

Poisoned fish, like contaminated drinking water, are a significant problem because they help complete what public health experts refer to as the "exposure pathway" loop, meaning caught fish people eat is how the chemical is ingested and causes harm.

According to the Michigan DHHS, studies have shown long-chain PFAS like PFOS have developmental toxicity, which makes exposure to children of particular concern. In addition to thyroid and liver problems, PFOS exposure has been linked to linked to delayed puberty onset and associated with Attention Deficit Hyperactivity Disorder.

Of the numerous different PFAS formulations used by industry and the military, PFOS is the most commonly detected in Great Lakes fish and wildlife. Between 2010 and 2014, the state sampled water and fish for PFAS at 19 different locations around Michigan and PFOS was detected in over 99 percent of the fish fillets tested.

Michigan has an ambient surface water quality threshold of 11-ppt for PFOS, established to guide fish consumption advisories. That's separate from an EPA drinking water health advisory level of 70-ppt for chronic exposure to PFOS.

In the Rogue River, the PFOS advisory is limited to just the dam backwaters, which, fortunately, people who regularly fish in Rockford say is less frequented than downstream waters. Part of the reason is dam itself, which effectively splits the river into separate fisheries. Local anglers say they generally avoid the impoundment area, known as the millpond, believing it to be polluted by the tannery.

Rockford police chief David Jones, serving as interim city manager following the unexpected death of longtime city manager Michael Young last year, said the city "is aware of the work plan submitted to the DEQ as well as the scheduled site work planned on the property and nearby river bank."

"Until we have had the chance to review the data gathered from the testing, we will have no official comment," he said.

Pawloski said sampling results will drive the next steps in Rockford.

"It's wait and see," he said. "Get sampling done, look at results and go from there."